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10/747,863

12/23/2003

Clive Smith

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09/15/2009

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EXAMINER

MONIKANG, GEORGE C

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

09/15/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                       |                                     |  |
|------------------------------|---------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/747,863  | <b>Applicant(s)</b><br>SMITH, CLIVE |  |
|                              | <b>Examiner</b><br>GEORGE C. MONIKANG | <b>Art Unit</b><br>2614             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8 and 10-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 is/are allowed.
- 6) ☒ Claim(s) 4-6, 8, 10-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 10/15/2008, with respect to the rejection(s) of claim(s) 1-6, 8, 10-17 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Greenberger, US Patent 6028942, Mohri, US Patent 4765321 & Thomas, US Patent 5006952.

Double patenting rejection has been withdrawn due to filling of terminal disclaimer.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 8, 10-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Greenberger, US Patent 6028942.

Re Claim 8, Greenberger discloses an acoustic-to-electrical transducer for detecting body sounds (Greenberger, col. 25, lines 42-57), the transducer comprising: a diaphragm having an electrically conductive surface (Greenberger, col. 25, lines 42-57), the diaphragm being mounted in a housing such that the diaphragm can make contact

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with the body and vibrate in response to body sounds (Greenberger, col. 25, lines 42-57); a fixed conductive plate substantially parallel to the diaphragm (Greenberger, col. 13, lines 1-3), mounted within the housing, the conductive plate being positioned at a distance from the diaphragm, the diaphragm conductive surface and fixed conductive plate forming two plates of a capacitor and connected in the form of an electrical capacitance to electrical circuitry (Greenberger, col. 25, lines 42-57); a capacitance-to-electrical conversion means to convert diaphragm-plate capacitance changes due to body sound vibration to electrical signals (Greenberger, col. 25, lines 42-57), a drive circuit connected to diaphragm electrically-conductive surface (Greenberger, col. 25, lines 42-57); an AC signal voltages applied to a surface, wherein the AC signals are noise-canceling signals that increase the signal-to-noise ratio of the electrical conversion, where the signal is due to body vibration and the noise is due to ambient sound (Greenberger, abstract).

3. Claims 10-13 have been analyzed and rejected according to claim 8.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mohri, US Patent 4765321.

Re Claim 4, Mohri discloses an acoustic-to-electrical transducer for detecting body sounds, the transducer comprising: a diaphragm displacement-to-electrical conversion means to convert diaphragm displacement due to body sound vibrations to electrical signals, said conversion means mounted in a housing( fig. 10; col. 2, lines 24-35); the diaphragm can make contact with a body and vibrate in response to body sounds (fig. 10; col. 2, lines 24-35); said conversion means being mounted in said housing such that the transducer can be positioned near the body to detect diaphragm displacement (fig. 10; col. 2, lines 24-35); but fails to disclose a diaphragm separate from the housing and can be attached or adhered to said body. It would have been obvious to built the diaphragm to be separate from the stethoscope housing where the diaphragm is capable of being attached to a human body to pick up sounds for the purpose of having a dynamic system.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mohri, US Patent 4765321, in view of Greenberger, US Patent 6028942.

Re Claim 5, Mohri disclose the transducer according to claim 4, but fails to disclose wherein: the diaphragm includes a conductive surface or plane connected as one electrode of a capacitive transducer (Greenberger, col. 25, lines 42-57: the transduction of vibration signals to electrical signals can include the use of variable capacitance); the displacement-to-electrical conversion means being a capacitance-to-electrical conversion means with a capacitive electrode mounted in said housing and connected to a circuit such that the diaphragm conductive surface and capacitive electrode form a capacitance (Greenberger, col. 25, lines 42-57: the transduction of vibration signals to electrical signals can include the use of variable capacitance), said capacitance changing in response to diaphragm displacement due to body sound vibration (Greenberger, col. 25, lines 42-57: the transduction of vibration signals to electrical signals can include the use of variable capacitance) as taught in Greenberger. It would have been obvious to modify the Mohri reference with a transduction method such as variable capacitance as taught in Greenberger (Greenberger, col. 25, lines 42-57: the transduction of vibration signals to electrical signals can include the use of variable capacitance) for the purpose of incorporating other methods of displacement to electrical conversion.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mohri, US Patent 4765321, in view of DesLauriers et al, US Patent 5774563.

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Re Claim 6, Mohri discloses an acoustic-to-electrical transducer for detecting body sounds (fig. 10; col. 2, lines 24-35), the transducer comprising: a diaphragm mounted in a housing such that the diaphragm can make contact with a body and vibrate in response to body sounds (fig. 10; col. 2, lines 24-35); a diaphragm displacement-to-electrical conversion means to convert diaphragm displacement due to body sound vibrations to electrical signals (fig. 10; col. 2, lines 24-35); but fails to disclose the diaphragm attachment means including a provision for adjustment of diaphragm dynamic characteristics including tension and resonance frequency as taught in DesLauriers et al (DesLauriers et al, col. 4, lines 1-13). It would have been obvious to modify the Mohri stethoscope with the tension and resonance frequency adjustment capability of DesLauriers et al for the purpose of tuning the diaphragm plate.

Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas, US Patent 5006952, in view of Greenberger, US Patent 6028942.

Re Claim 14, Thomas discloses a electrical audio frequency signal source with one or more output channels connected to one or more corresponding electrodes (Thomas, fig. 8: 150, 250; col. 1, line 67 through col. 2, line 5), said electrodes mounted on or close to the surface of a device that can be removably attached to a live or inanimate body (Thomas, col. 1, line 67 through col. 2, line 5: transducer could be mounted on a human which constitutes a live body); but fails to disclose being used in conjunction with a capacitance-to-electrical conversion means. However, Greenberger discloses a variable capacitance transduction method that compensates for diaphragm

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displacement (Greenberger, col. 25, lines 42-57: the transduction of vibration signals to electrical signals can include the use of variable capacitance). It would have been obvious to improve the transducer of Thomas with the variable capacitance transduction method of Greenberger for the purpose of compensating for diaphragm displacement.

Re Claim 15, the combined teachings of Thomas and Greenberger disclose the signal source and electrodes as in claim 14 wherein the capacitance-to-electrical conversion means is a capacitive acoustic-to-electrical transducer for detecting body sounds (Greenberger, col. 25, lines 42-57), the transducer being adapted to detect voltage changes on the electrodes, converting such voltage changes to an audio output signal (Thomas, col. 1, line 67 through col. 2, line 5: transducer produces audio outputs).

Re Claim 16, which further recites, "Wherein the signal source comprises, or can be driven by, a computer." Thomas and Greenberger do not disclose a computer as claimed. Official notice is taken that both the concepts and advantages of using a computer to drive audio signals are well known in the art. Thus it would have been obvious to use a computer to drive audio signals to make the system more dynamic.

Claim 17 has been analyzed and rejected according to claim 14.

### ***Allowable Subject Matter***

1. Claims 1-3 are allowed.
2. The following are examiner's statement of reasons for allowance:



Referring to claim 1, the Mohri reference (US Patent 4765321) discloses an acoustic-to-electrical transducer for detecting body sounds, the transducer comprising: a diaphragm mounted in a housing such that the diaphragm can make contact with a body and vibrate in response to body sounds; a diaphragm displacement-to-electrical conversion means to convert diaphragm displacement due to body sound vibrations to electrical signals. The Mohri reference taken alone or in combination with another, do not disclose, teach or fairly suggest a the transducer housing having one or more apertures or openings to provide a low-impedance acoustic path for ambient sound to enter the space within the housing including the space behind diaphragm as recited by independent claim 1. The aspects as summarized above are neither anticipated nor obvious by the prior arts of record.

Claims 2-3 depend on claim 1.

### **Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE C. MONIKANG whose telephone number is (571)270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George C Monikang/  
Examiner, Art Unit 2614

9/11/2009

**/Vivian Chin/**  
**Supervisory Patent Examiner, Art Unit 2614**